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NEW AND NOTEWORTHY FISHES

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The scientific collection of fishes consists of 3216 tagged specimens and perhaps as many more too small for individual tags, representing 92 families divided into 230 genera of which there are 304 species. The majority of these species having been previously recorded for the area in question, no mention will be made of them, and this report will be confined to the consideration of noteworthy extensions of range of known species and descriptions of these believed not to have been hitherto described.

Family TORPEDINIDAE: Electric Rays

1. **Narcine ommata** Clark, new species

Total length 160 mm.; body 140 mm.; width of disk 74 mm.; length of disk about the same; posterior end of slit-like vent equidistant from end of caudal and end of nasal flap. Spiracles comma-shaped, forming the posterior border of the eyes, the tail of the comma pointing forward along the lateral margin of the eye, their margins beset with low tubercles. Interorbital width 1.5 in snout. Dorsal fins nearly equal, origin of first nearly over end of ventral base. Caudal somewhat fan-shaped, its ventral edge nearly straight.

Color in spirits: Upper parts light brown, an irregular paler area across disk in front of eyes, with a dusky blotch each side of central anterior edge of disk. Leopard-like spots consisting of clusters of dots, one on each side of disk just over gill-slits; strongly marked ones in axils of pectorals, a faint one in middle of back between these; one on each side of mid-dorsal line of middle of ventrals, and one on each side middle of dorsals; a faint one on each side base of caudal. In middle of back an ocellated marking consisting of (1) small black dot at center; (2) rather narrow yellow ring; (3) broad black ring; (4) narrow bright halo; (5) row of black dots a little larger than central one, these each surrounded by a lighter margin. Color markings strikingly similar to those of *Discopyge ommata* Jordan and Gilbert, but ventral fins not united into a continuous disk below the tail as in *Discopyge.*

Holotype and only specimen: No. 5444 Mus. Calif. Acad. Sci. Ichthyol., obtained in dredging off the **Pacific coast of Central America, exact location unknown,** field tag having become loose in transit.

Family Muraenidae. The Morays

2. **Rabula rotchii** Clark, new species

Total length about 235 mm.; head 3.5 in trunk, depth about 14.7 in length; eye 1.5 in snout, over about middle of gape, which is about 2.5 in head; teeth all conical, those of both jaws and vomer largest and strongest in front; posterior nostril minute, close to eye and nearly above it; anterior nostril tubular, near end of snout. Dorsal posterior, its distance from vent less than head. Color, black, with numerous sharply marked white spots, smaller than pupil, scattered along sides of body in 3 rows. Species apparently most nearly related to *Rabula davisi* Fowler = *Rabula aquae-dulcis* Jordan and Davis, nec Cope, but differing in proportions and color. Named for the genial captain of the *Zaca*, Garland Rotch.

Holotype: No. 4964 Mus. Calif. Acad. Sci. Ichthyol., from tide-pools, **Black Beach Anchorage, Charles Island, Galapagos,** May 14, 1932.

Family Belonidae. The Needle-fishes

3. **Belone platyura** Bennett

A noteworthy extension of range of a species hitherto known to inhabit the region from the Red Sea to Hawaii. One specimen was secured at Gardner Bay, Hood Island, April 2, and 2 from off Cape San Lucas August 5. They agree with the description of *B. platyura* in the Hawaiian Report, Bull. U. S. Fish Comm. XXIII, part I, 1903, p. 122.

Family Exocoetidae. The Flying-fishes

4. **Parexocoetus papilio** Clark, new species

Length of body 19 mm.; head 4.5 in body; depth 4.75; eye about 2.2 in head, about twice as long as the short snout; a short thickish black barbel one side of chin, doubtless the remainder of a pair; pectorals reaching to origin of dorsal;

ventrals broad, wing-like, reaching to middle of anal; dorsal elevated, its longest rays reaching beyond base of caudal, conspicuous by its dark tip; lower lobe of caudal much the longer, longer than head; lower jaw the longer, chin thick, mouth oblique. D. 9; A. 10, mouth small, teeth undeveloped. Scales undeveloped, but a somewhat more advanced specimen had faint signs of about 40. Body and pectorals mottled, the mottling in the form of bars; ventrals and dorsals black; caudal pale, with black dots along the rays of the long lower lobe; body coarsely punctate, but pale.

Holotype: No. 5262, Mus. Calif. Acad. Sci. Ichthyol., from **Braxilito Bay, Costa Rica.**

Four specimens were obtained from among schools of little flying fishes crowding about the submerged light at Braxilito Bay, July 1, and off Bat Islands the next evening. The holotype is from the former locality, the three paratypes 5496, 5496a, 5496b, from the latter. With the exception that they lacked its brilliant coloration our fishes remind one somewhat of Beebe's colored drawing of the "Butterflying Fish," plate II, opp. p. 68, of the "Arcturus Adventure," and there identified as *Cypselurus furcatus* Mitchill. Our little fishes, with their moderate pectoral fins, elevated dorsals, long ventrals and other characteristics represent the genus *Parexocoetus*, "small fishes of tropical coasts, widely distributed."

One of the paratypes, No. 5426 of our collection, 22 mm. long, standard length and favorable for examination, had pectorals with 14 rays, the first 3 unbranched, the 4th and 5th longest and forked at tip; middle rays of dorsal longest, reaching well beyond base of caudal; ventrals long, expanded, reaching nearly to end of anal base, their insertion about midway between gill-opening and base of caudal. Markings like those of holotype. The fin membranes of these little fishes are very frail, making examination without mutilation very difficult.

Family Bothidae

5. **Monolene asaedae** Clark new species

Four specimens obtained, three, Nos. 4727 to 4729 inclusive being dredged from off Port Angeles Light July 14, and one, No. 4805, from Lat. 18° 14′ N.; 103° 23′ W., in 60 fathoms, July 17.

Exceedingly thin flat-fishes, translucent, the interneural and interhaemal areas set off sharply in their transparency from the rest of the body, the neural, interneural, haemal and interhaemal slender spines showing through. The gills and viscera also show through the thin skin, as do the muscular bands of the body. Fins all black; lateral line of left or colored side, which has a marked curve, running far out on pointed caudal, and hardly perceptible, if present at all, on right or blind side. Fugaceous scales nearly all lacking on left or colored side of all specimens where they appear to be cycloid; persistent on the blind side where they are markedly so. Outline of body ovate-lanceolate and much like that of a leaf. The following is a more detailed description of the specimen chosen as holotype:

Length of body 69 mm.; head 3.35 in body; depth 2.5, the greatest depth well forward, over about the end of the opercle, from which both dorsal and ventral

outlines proceed almost straight to the caudal; eye 3.5 in head; maxillary from tip of snout 3.5, reaching about to middle of pupil. D. 75; A. 61; scales 15–75–18; pectoral 2 in head, of 10 rays; interocular ridge narrow, rather high and sharp; chin with a symphyseal knob; teeth very small in a single row in jaws; a sharp but small spine before vent. Gill rakers 3+5, remote from each other, triangular, smooth, and rather short. Fin membranes naked.

Holotype: No. 4729, Mus. Calif. Acad. Sci. Ichthyol., **dredged off Port Angeles Light, Oaxaca, Mexico.**

Our No. 4727 has the dorsal rays 78, anal 56, and scales 14–67–13. Our specimens are all unlike either of the two species of *Monolene* described by Garman 1899 from the Pacific coast of Mexico, the only Pacific species heretofore described. Named for Toshio Asaeda, the clever and accomplished artist of the expedition.

Family Cynoglossidae. Tongue-fishes

6. **Symphurus melanurus** Clark, new species

Total length 169 mm.; body 155 mm.; head 5.16 in body; depth 3.22; eye 6.5 in head; maxillary 4.2, reaching about to middle of eye; snout 4.2; D. 100, not counting half of caudal which is continuous with it, the fin beginning slightly in advance of eye, the first rays somewhat produced, the fin highest about middle of body, but always low, the longest rays about length of snout. A. 35, similar to dorsal. Scales ctenoid, in longitudinal series 89, transversely 39. Color uniform brown except dorsal and anal, which are pale anteriorly, gradually darkening posteriorly, the last third of each and the caudal black.

Holotype: No. 4401, Mus. Calif. Acad. Sci. Ichthyol., dredged off **Acapulco, Mexico,** 18° 49′ N., 99° 05′ W. July 15, 1932.

A paratype, No. 4423, 166 mm. long was partly dissected: Vertebrae 9 + 39 = 48; gillrakers minute tubercles, 0 + 10; lower pharyngeals narrow, with one irregular row of sharp teeth; upper pharyngeals rounded pads. An examination of 3 additional specimens gave D. 100 to 105; A. 83 to 87. Most nearly like *atricaudus*, from which it differs in having uniform coloration and fewer scales.

Family Achiridae. The Broad Soles

7. **Achirus zebrinus** Clark, new species

Total length 118 mm.; body 94 mm.; head 3.4 in body; depth 1.66; upper eye 5 in head; snout 4; mouth on colored (right) side extending to below pupil, short and much curved downward on blind side; lips on colored side much fringed; a hard blunt spine on upper lip. D. 53; A. 41; left V. 2, rudimentary; right V. 4, adnate to anal. Caudal rounded, with rough scales; dorsal and anal rays broad, densely clothed with rough scales, the dorsal rays divided into closely parallel branches. Scales 30–77–39 on blind side, about 75 on colored side, very rough ctenoid on colored side, those on blind side of head produced into filaments. Anterior dorsal and anal rays on blind side clad in similar filaments; scales of nape and chin enlarged, those of upper lip and chin developed into lacerate flabellae resembling

minute barbels. Teeth minute, in a small villiform patch on mandible of blind side. Gillrakers almost rudimentary.

General color blackish or dark brown with numerous narrow white bars about ⅓ or ¼ as wide as interspaces, 13 crossing the body, 6 irregular and broken on head, those on the caudal becoming 9 horizontal parallels posteriorly.

Holotype and only specimen: No. 4448 Mus. Calif. Acad. Sci. Ichthyol., dredged in **15° 40′ N., 93° 49′ W.**

In general shape this fish reminds one of the common hog-choker of the Atlantic (*A. fasciatus*) but is somewhat shorter, and has many of the scales of the eyed side with hair-like appendages, as in *A. barnharti* or *A. mazatlanus*, but more irregularly scattered than in the last named species, from which it is strikingly distinguished by its zebra-like markings and the absence of a pectoral fin.

Family Nomeidae

8. **Nomeus gronovii** (Gmelin). Portuguese Man-of-War Fish; Harder; Pastor

A single specimen of what was identified as this species was taken at the surface around the light by means of a dipnet at Academy Bay, Indefatigable Island, on the night of May 3, by Frank Taiga. On account of its apparent rarity in the Pacific, as well as discrepancy of descriptions by various authors, our specimen, which was in a condition of extreme inanition when it died, is thus described:

Head large, 3.2 in body; depth at deepest portion (about the nape) 3.2; eye large 2.5 in head; snout 4.5; maxillary short, 3.5 in head, reaching anterior margin of orbit; D. XII, 26; A. II, 26; scales cycloid, 3–66–14, the lateral line high along back; cheeks scaly, nape with small scales. Pectorals 20, caudal rather deeply forked, the lobes sharp, about equal. A row of small incurved canine-like teeth in jaws; premaxillaries not protractile; gill membranes free from the isthmus; branchiostegals 6; pseudobranchiae well developed; gillrakers about X+14, slender, the longest about as long as the pupil. Color in spirits brownish.

The following is a description of the living fish shortly after capture and during its sojourn in an aquarium where attempts were being made to keep it alive. "A small slender dainty blue fish, rather compressed. Azure blue with darker blue bars on sides. A remarkable feature is the united ventral fins, which are a little in advance of the pectorals and are spread out in a fan-shaped form, more hyaline at base between rays, rays and distal margin deeper blue, forming the appearance of a lace collar." Next morning by daylight the following notes were added: "Middle line of back, pectoral and deeply forked caudal entirely dark blue; four blue blotches, narrowing downward, extend from back down on sides; rest of side silvery. Snouth blunt; eye large. The expanded (united) motionless ventrals seem to be used as a sort of parachute."

Of the genus *Nomeus*, to which the specimen appeared to belong, the original brief description of Cuvier fits very well. That of Goode and Bean enumerates among other particulars "caudal not deeply forked," and in this particular they are followed by Jordan and

Evermann. Goode and Bean's figure however, show the caudal of their specimen to be fairly well forked, and Meek and Hildebrand say "caudal fin forked, the lobes of about equal length." As to color, most descriptions give the color as brown, but Goode and Bean describe it as blue.

As to distribution, the species was originally described as "Tropical America," Jordan and Evermann give its range as "Tropical parts of the Atlantic and Indian Oceans in rather deep water swimming near the surface, very abundant in the Sargasso Sea, common north to Florida and Bermuda; occasionally farther; Woods Hole, Mass., also recorded by Eigenmann from Panama." Eigenmann's reference is to a collection of fishes in Cornell University, mostly from Brazil, in which he reports 5 specimens of *N. gronovii* from "rocky pools at Panama" (Ann. N. Y. Acad. Sci. 7, 1894: 629). The next record is that of Snodgrass and Heller who obtained "a few small specimens taken with Portuguese Men-of-War about Lat. 7° 26′ N., Long. 100° 36′ W., in open sea" considerably to the north and west of the Galapagos. Fowler reports 4 specimens in very poor condition in the Bishop Museum from Oahu, and one from Lat. 6° N. Long. 162° W. at surface, near Christmas Island. Our specimen was taken when and where there was an unusual assemblage of fishes about the light, with them a school of jellyfishes and a small Portuguese Man-of-War.

It is difficult to imagine how the Portuguese Man-of-War and its companion fish, both feeble swimmers and confined to the surface of tropical waters, could find any passage-way from the Atlantic to the Pacific. Atlantic and Pacific specimens of both these species should be carefully compared.

Family Priacanthidae. The Catalufas

9. **Pseudopriacanthus lucasanus** Clark, new species

Holotype and only specimen: total length 73 mm.; body 56 mm.; head 2.4 in body; depth 2; eye 2 in head; snout 4.3; maxillary 2, oblique, extending nearly so far as to middle of pupil; interorbital width 4 in head, or about 2 in eye; D. X, 11, the spines strong and strongly fluted; A. II, 10, similar to dorsal; pectoral rays 16, the fin short, 1.5 in head; ventrals long, reaching beyond origin of anal. Scales small, very rough, 8–48–14. Teeth in several rows along edge of jaws, the outer somewhat enlarged, none on vomer or palatines; preorbital very narrow, rough; preopercle serrate, its arms straight at an obtuse angle; opercle narrow; branchiostegals 4; pseudobranchiae well developed; gillrakers long and numerous. Color bright yellow; the only touches of color except the yellow being the black tips of the caudal, ventral and anal, and soft dorsal fins.

Holotype: No. 2708, Mus. Calif. Acad. Sci. Ichthyol., from dredge haul **among rocks off Cape San Lucas, Lower California,** August 5, 1932.

Family Oplegnathidae. The Stonewall Perches

10. **Oplegnathus insigne** (Kner) Stonewall Perch

Three specimens collected, one young 15 mm. long, west side of Albemarle Island near the lava fields, May 22, with 5 black crossbars almost identical in markings with young example No. 1, described by Snodgrass and Heller, and another still smaller and more faintly marked from about the light, Tagus Cove, May 26. The third specimen, 350 mm. long, was one of the most strikingly marked of all fishes taken on the cruise. The general color was dark brown, almost black, except the breast and belly, the body and fins being covered thickly with white spots and vermiculations a little narrower than the diameter of the pupil. The general appearance was so unusual that the only clue to the family was the remarkably thick upper lip with the teeth coalesced into a continuous but weakly serrate plate in each jaw, much like those of the parrot fish. The species was assumed to be that of dissimilarly marked specimens recorded for the region.

Family Pomacentridae. The Demoiselles

11. **Demoisellea peregrina** Clark, new species

The following is a description of our largest and most mature specimen.

Total length 18 mm.; head 2.57 in body; depth 2; eye 2.3 in head; snout 3.6; maxillary reaching nearly to pupil. D. XIII, 13; A. II, 12; scales 3–27–9, ctenoid, 18 pores, the lateral line ending under the dorsal; a low sheath of scales along base of dorsal and anal, an enlarged axillary scale at base of ventral; fin membranes naked; preorbital narrow, entire, only partly sheathing the maxillary; preopercle entire; teeth in jaws minute, conical. Gill membranes free from the isthmus; branchiostegals 6; pseudobranchiae well developed; gillrakers slender, about as long as pupil. Soft dorsal and anal rounded, the rays higher than the spines, the longest (middle) of the dorsal reaching nearly to the end of the short caudal peduncle; caudal emarginate. Origin of ventrals under that of the pectorals, both fins about 1.4 in head, first ray of ventral produced, reaching anal.

Color a rather uniform brown, except pectoral, tip of soft dorsal, soft anal, and all of caudal, which are white.

Holotype: No. 5437, Mus. Calif. Acad. Sci. Ichthyol., attracted by submerged light, **Bat Islands, Costa Rica,** July 2, 1932.

Two examples were obtained among the small fishes crowding about the submerged light at Albemarle Island, May 29, and 14 from Bat Islands, July 2, along with the holotype.

12. **Eupomacentrus beebei** Nichols

A sharp lookout was kept for this brilliantly colored little fish, hitherto known from only one specimen, body length 15 mm., obtained by Beebe in 1923, described by Nichols, and illustrated in a colored plate in Beebe's "Galapagos; World's End."

One was obtained at the north end of Indefatigable Island, not far from Seymour Island, and in the vicinity of Eden Island, the type locality. A brilliant example was seen in a tidepool on Charles Island, but it escaped into a rock crevice, and eight were taken from tidepools along the west side of a lagoon near the lava fields of Albemarle Island between Iguana and Tagus Coves. As there was sufficient material at hand one specimen was partially dissected for a fuller description than any available.

Body length 15 mm.; head 2.5 in body; depth 1.9; eye 3 in head; D. X, 14; A. II, 11; pectoral rays 20; ventrals with an accessory scale between them; gill membranes free from isthmus; pseudobranchiae large, well developed; gillrakers rather slender, remote, X+10; scales 2–23 (19 pores)–9; lower pharyngeals a solid triangular piece with concave sides; intestine somewhat elongate, vertebrae 10+14=24.

The most striking feature about the little fishes is that the teeth are emarginate as in *Abudefduf*, but the preopercles are serrate as in *Eupomacentrus;* a connecting link between these two genera is thus suggested.

Family Coridae

13. **Julidio maculosus** Clark, new species

Total length 44 mm.; body 37 mm.; head 3.4 in body; depth 3.75; eye 3.6 in head; = snout; maxillary hidden under the rather narrow preorbital; interorbital slightly concave, its width nearly equal to diameter of eye; D. IX, 11, A. III, 9; the spines in both dorsal and anal difficult to distinguish from rays; scales 3–36–7, all thin and cycloid.

Ground color white, covered with large irregular black or deep brown blotches of irregular size, an irregular white line, about 2 scales wide, along middle of side dividing dorsal set of blotches from ventral; pectoral and caudal colorless, the other fins mottled, middle of dorsal with an occellated oval black spot about as large as eye.

Holotype: No. 3156 Mus. Calif. Acad. Sci. Ichthyol., **Conway Bay, Indefatigable Island.**

More thorough examination was made of a paratype which was partially dissected with the following results: D. IX, 12; A. II, 14; anterior enlarged incisors 2/4, no posterior canines; vertebrae 9+16=25.

These strikingly piebald black and white wrasse fishes were all small, the longest being 43 mm. long. Two were obtained from tidepools along James Bay, James Island, June 4, ten from Conway

Bay, Indefatigable Island June 8, and four from tidepools of the same island the next day.

Family Gobioididae

14. **Gobioides peruvianus** (Steindachner)

The fish tentatively identified with this and taken up near the head of Pedregal River, Honduras, was so far out of its previously recorded range "Shores of Ecuador and Peru, entering rivers" that it is deemed best to give a brief description.

Total length 350 mm.; head 6.5 in body; D. VI, 16; A. 16, the spines and rays hidden in thick membrane so that their character and exact count is uncertain; ventrals united into a cup-shaped sucker, as is common with gobies. An eel-shaped fish with minute eyes nearly on top of head; posterior nostril slit-like, midway between eye and tip of snout; anterior nostril round, small, near lip. Mouth very oblique, armed with a row of sharp fangs. Gill membranes united to isthmus.

Family Clinidae. The Scaled Blennies

Crockeridius, new genus

Blennies, apparently closely related to *Mnierpes* or to *Emnion*, genera rather midway between the Clinidae and the scaleless blennies. They differ from *Mnierpes* in having a small orbital tentacle and in dentition, and from *Emnion* in the character of the lateral line and in conformation of head. Type, *Crockeridius odysseus*, the genus named for Mr. Templeton Crocker.

15. **Crockeridius odysseus** Clark, new species

Total length 78 mm.; body 65 mm.; head 5.4 in body; depth 8; eye large and prominent, 3.5 in head; snout 4, the upper lip forming a peculiar upturned ridge; interorbital narrow, concave, less than half eye; maxillary to tip of snout and including projecting upturned lip 2.5 in head; gape not quite reaching to middle of pupil; cheeks puffed and tumid; gill membranes free from isthmus, forming a fold across it; branchiostegals 5. D. XXIV, 14, the spinous portion low and even, the spines a little shorter than diameter of eye and about 1.75 in length of rays; A. I, 26, similar in shape to soft dorsal, but membrane between rays incised to near base, leaving a triangular flap of membrane from tip of each ray posteriorly. Ventrals I, 3, the short spine and stout long first ray in a common integument, separated by a deep incision from the other two rays, the fin inserted a short distance behind gill-membrane fold and slightly in advance of origin of pectorals, their longest ray about 1.5 in head and their tips reaching about two-thirds way to vent; pectoral somewhat acutely rounded, with 13 rays, the longest about as long as head, the tips reaching to vent; caudal rays 13, the fin pointed and free from dorsal and anal, whose tips reach its base; caudal peduncle very short. Scales about 7–53–7, lateral line forming an arch of about 17 scales above the pectoral, thence descending to the middle of side. From the end of the curve it almost disappears, being represented by an occasional almost imperceptible ridge without any sign of tubes. Head, breast, and belly naked.

The scales are peculiar structures, hardly showing at all on moist specimens; on alcoholic specimens allowed to dry the scales curl up, resembling loosened patches of skin, so that it was at first thought they were the anterior flaps of scale pockets from which deciduous scales had been shed, as has been described and figured for *Emnion bristolae* Jordan (Proc. U. S. Nat. Mus., 19: 454, 1897). It is only by some effort that these seeming flaps of skin can be loosened and pulled from the body, when they show the fluting and radiating lines characteristic of the point of attachment of many scales.

Holotype: No. 2806, Mus. Calif. Acad. Sci. Ichthyol., from **pot-holes, Duncan Island, Galapagos,** June 7, 1932.

Details of dentition, gill structure, skeleton and the like were best made out by a dissection of one of the paratypes, (No. 2809) with the following results: Upper jaw with a row of stout canines and several rows of minute teeth behind them; lower jaw with only the row of canines; no teeth on palatines, a small patch of minute granules on vomer. Gills 3½, a small slit behind the last; gillrakers a few wide-set short tubercles. Stomach short and curved, no cœcae noted; contents a small bristle-bearing worm. Another contained insect remains. Vertebrae 40.

The examination of a female revealed a large number of minute eggs. All our specimens are much alike in color, nearly black, the caudal marked with white spots producing a barred appearance.

The history and habits of this species are more remarkable than their appearance. The first example seen was noticed on the top of a rock along the shore of Wreck Bay, Chatham Island, April 18. It looked very much like a curled up salamander, with black, smooth, glistening skin and prominent beady, watchful eyes. Upon approaching with a dipnet it sprang into the water. From time to time about a dozen more were seen coiled up on rocks, and it was then ascertained that they were fish. They were seen from time to time making quick jumps from and over rocks into deeper water. From their alertness and activity and their unexpected position they were apparently the most elusive of fishes and probably absent in collections. Beebe had apparently caught glimpses of them, for he remarks (Galapagos, p. 112): "Blennies climbed out and flicked here and there upon tide-soaked rocks."

The capture of the first specimen was due to the skill of Frank Taiga, a Samoan with unusual ability in the capture of fishes. Several were seen curled up on a rock on the shore of Indefatigable Island at Academy Bay; by carefully stalking them from behind the rocks and making swift strokes with the landing net one after another was secured until we had 9 specimens. One, seen in a tide-pool, was of a beautiful emerald green color, but it escaped.

On a trip along the shore of Duncan Island, June 7, was discovered what appeared to be the home of the rock-springers. They seem to be neither ocean nor tidepool fishes but rather pot-hole inhabitants, living, along with suck-fishes (Gobiesocidae), in deep depressions back some distance from all but the highest tides. Un-

like the suck-fishes they have no means of attaching themselves firmly to rocks against the dash of surf. They showed great alacrity in climbing out of the steep sided pools and it was only by administering poison and keeping them down in the pools that they could be collected in such situations. They were indeed able to ascend the smooth vertical side of the enameled collecting can.

Later on (July 3), in small alga bottomed pools back from the shore of Murcielago Bay, near Bat Islands, the newly-born or newly-hatched young were found, their parents about the pool edges.

Notwithstanding their climbing ability it is apparently not by this means that they attain their positions on the tops of the rocks. They were observed, time after time, hurled from height to height by successive surges to their final perch where they lay, apparently panting for breath, awaiting the dashing spray. It is probable that their peculiar scale structure, presenting a great expansion of surface, is an adaptation for respiration by means of the skin, as in salamanders. It is probably only adventurous individuals which leave their native pools and pioneer down to the edge of the surging ocean, that one finds coiled upon rocks, and that is to these adventurers that the wide distribution of the species as well as its integrity is due.

Specific name for Ulysses in commemoration of the character of his arrival at the land of the Phæacians.

16. **Scartella atrimana** Clark, new species

Total length 18 mm.; body 16; head 3.2 in body; depth 3.55; eye 2.5 in head; snout 3.3; maxillary about 3.3, reaching to anterior border of eye; D. XII, 11, the second spine highest, others gradually decreasing, giving the spinous portion a wave-like form; A. 15 or II, 13, the spines hardly or not distinguishable from rays; V. I, 2, the small spine in the same integument as the first ray, rays in thick integument, not forked; P. 13; caudal truncate, well separated from dorsal and anal by a slender peduncle; no scales; a faint lateral line arching over the pectoral. Teeth a comb-like row, solid in jaws, acute. Branchiostegals 5; gill-membranes attached to isthmus a little below base of pectoral, but a peculiar fold across isthmus; pectoral broad and conspicuous, pointed, about 1.2 in head, its tip reaching to base of 4th anal ray; ventral inserted before pectoral, 1.5 in head, the tip reaching about ⅔ way to anal; nostrils rather wide apart, the lower with a filament; a short simple supraocular filament; preopercle with a short, flat spine-like extension. Color: nape, upper part of head, cheeks, top of back up to middle of spinous dorsal with punctate blotches; lower part of pectoral black; a black spot in axil of pectoral; a small black spot in each anal ray; remainder of body cream color. Others agree fairly well with this.

Holotype: No. 3988, Mus. Calif. Acad. Sci. Ichthyol., **about submerged light, Albemarle Island.**

Paratype examined for fuller details gave gillrakers mere tubercles; pseudobranchiae present, very small; vertebrae 8+16=24.

Our specimens differ from *S. brevirostris*, with which it was attempted to identify them, by general difference in physiognomy.

The interorbital space, instead of being narrow is rather broad, there being a brow-like projection above the eyes which are not notably high and close together. The caudal is truncate, at times with a very slight emargination. A feature that first catches the eye is the black of the lower half of the pectoral.

The following will indicate its abundance and distribution: Socorro Island, March 27, one; Postoffice Bay, Charles Island, April 23, one; Black Beach Anchorage, April 25, twenty-two; Academy Bay, Indefatigable Island, May 1, one; Tagus Cove, Albemarle Island, May 24 and 25, six; same island off Vilamil April 29, fifty-seven; James Bay, James Island, June 3, two; Braxilito Bay, July 1, seven; off Bat Islands, July 2, ten; Navidad Bay, July 18, one; Banderas Bay, July 20, one; and off Maria Madre, July 23, one. Total 100 specimens.

It is noteworthy that, although these specimens were taken over much of the area investigated and during much of the time of the investigation, there is little change of size or appearance of increased maturity.

Family CERDALIDAE

17. **Cerdale bilineatus** Clark, new species

Total length 39 mm.; body 35 mm.; head 7 in body; depth 10.1; eye 5 in head; gape very short, sub-vertical, not nearly reaching eye; lower jaw projecting, entering into the rounded profile. D. about XXII, 25, the spines gradually passing into simple but articulate rays, the low fin not notched, but apparently lower about the point of transition, the dorsal beginning a short distance behind nape. A. II, 26, beginning about middle of body; caudal rounded, its rays about 5, 18, 5, free from dorsal and anal. Ventrals apparently I, 2, or 2, the spine uncertain, one ray forked, its longest part about 1.5 in head, the fin inserted under origin of pectorals; pectorals acutish, of 9 rays, a little longer than ventrals. Gill opening a small pore before base of pectorals. Teeth a double row of strong rounded incisors in jaws. Apparently 3 branchiostegals. Most of the body naked, but with small circular non-imbricate scales scattered along middle of sides. Color, a long narrow black line along each side of dorsal beginning near tip of snout, a somewhat broader line extending from the very tip of snout across cheek and along middle side to tip of caudal. Near its posterior end there is a dusky extension like a blot passing down over the end of base of anal.

Holotype: No. 3245, Mus. Calif. Acad. Sci. Ichthyol., **Indefatigable Island,** June 9.

Examples were occasionally seen among rocks in the tidepools, exceedingly elongate, brightly striped fishes, very active and flexuous and able to escape the landing net, so that only the holotype was captured. The color markings were strikingly similar to that of *Petroscirtes tapeinosonoma* of which we secured a few specimens, but the fish was much more elongate.

The reader will at once be struck by the great disparity between the number of species (304) taken during the expedition and the

species discussed (17) in this report. All of the 3216 specimens represent a valuable addition to our scientific collection, even the ones too immature for certain identification; for juvenile forms are too little known, and further collecting may, in time, make their position certain. Along with the specimens are 150 colored drawings representing about 170 species, and a few duplicates showing color variations, drawn from life by the artist, Toshio Asaeda, which it is hoped may be published some time in the future.

The greater number of species not mentioned in the report for lack of space have been already reported for the region under discussion, and the mere giving of a list of names would add nothing to our knowledge, and as the area covered does not represent a definite biological area, a check-list would be of little significance. A few additional notes may be of interest.

(1) Although no living hammerhead sharks, *Sphryna zygaena*, were seen during the cruise, a great pile of skins and remains were seen on the beach of Isabel Island, where they had apparently been tried out for oil.

(2) A great school of rays, probably eagle rays, were seen swimming at the surface in shallow water near Hood Island, their expanded ventrals beating the water surface and making a striking spectacle. No specimens were taken, however.

(3) A large specimen of the spotted eagle ray, *Stoasodon narinari*, was seen at the shore of Wreck Bay, and a pair were seen at North Seymour, but none was taken.

(4) Our collection indicates that the flying fishes, of which we secured a goodly number, may need revision. A species described as *callopterus*, distinguished by having the pectorals covered with small, round, dark spots, is said to be "common at Panama, but not yet seen elsewhere" (Jordan and Evermann 1896). Beebe reported it at Hood Island under that name, remarking that "about one in every 50 had wings densely covered with round black spots," (Arcturus Adventure, p. 106). At Braithwaite Bay, Socorro Island, Revillagigedos, we found some specimens with many, some with a fair number, some with few, and some with no black spots, all apparently the same species. They were crowded with eggs which oozed out at a touch (March 28). It was at first thought that the black spots were characteristic of one of the sexes, but examination showed it not to be the case. Toshio Asaeda made a beautiful drawing of one of the spotted-winged specimens. Extensions of range, hitherto unrecorded but to be more or less expected, is that of *Petroscirtes tapeinosoma* Bleeker, from the South Seas to the Galapagos, where one was captured in a tidepool of Indefatigable Island near Seymour Island, June 9, and three more at Sulivan Bay, James Island, June 13. One might possibly expect in the colder, deeper waters an extension of members of a fauna found nearer the surface farther north; and so we found by dredging about San Nicolas and San Martin Islands numerous examples of *Chitonotus pugetensis*,

whose range had been given as San Francisco to Puget Sound, *Icelinus quadriseriatus* in colder deeper water as far as Cape San Lucas and Cedros Island, its previous range reported as "off San Francisco, between Point Reyes and Golden Gate."

Our collection is unusually rich in the little cling-fishes, or Gobiesocidae, of all ages and sizes, as these had been previously neglected and the tidepools were thoroughly searched for them. These minute creatures are difficult of identification, and there was a natural hesitancy upon deciding upon any of them being new.

A noteworthy event of the cruise was the receipt of a radiogram from San Francisco by the *Zaca*, in search of a surgeon to care for a man who had been attacked by what appears to have been a kingfish, or Wahoo, *Acanthocybium solandri*, which was at first reported as a barracuda. The *Zaca* left Wreck Bay and travelled back all night until about 8:30 next morning, when we made connections with the tuna boat where the accident occurred. According to accounts the fish had leaped up two fathoms above the water surface and gashed the man's throat, which was attended to promptly on our arrival. The boat contained anchovies for bait, and they were in the habit of grinding up tuna for "chum" to attract fish to their nets. It is probable the odor of ground fish or anchovies had maddened the kingfish. Anyone noting the Wahoo's arrowy dashes after fish fry or observing the row of sharp incisors could easily understand how such an accident might occur.

In reporting upon the scientific collection, the collection of living fishes brought back to the Steinhart Aquarium is naturally ignored, as the identification is in many cases uncertain and the certainty of the place of collection soon lost. Among them, however, was a handsome snake eel, *Quassiremus evionthas* (Jordan and Bollman), the only specimen known except the type described in Proc. U. S. Nat. Mus. 1889: 154, from Hood Island, Galapagos.